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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Michel G.M. Perbost et al.

Group Art Unit: 1631

Continuing Application for Pending

Examiner: Arden H. Marshel

Prior Application Serial No. 09/195,869

Filed: 11/19/98

Title: MINIMIZATION OF BLOOMING IN HIGH-DENSITY ARRAYS BY
USING REACTIVE WASH REAGENTS

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

PRELIMINARY AMENDMENT

Please cancel claims 1-20 of the present continuation application, and add the following new claims 21-36

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21. (NEW) A method used, during the solid-state synthesis of surface-bound polymers at different locations on a solid substrate to form an array, for removing a reaction solution including unreacted reactive reagents from the surface of the solid substrate and from any nascent polymers bound to the solid substrate, the method comprising:

selecting a reactive wash solution that is not reactive toward any nascent polymers bound to the solid substrate but that reacts with, and deactivates, the reactive reagents and that is miscible with the reaction solution; and

applying the reactive wash solution to the surface of the solid substrate in order to react with, and deactivate, any unreacted reactive reagents.

22. (NEW) The method of claim 21 wherein the reaction solution includes reactive monomers and a catalyzing reagent that catalyzes the coupling of reactive monomers to the nascent polymers.

23. (NEW) The method of claim 22 wherein the reactive monomers are deoxynucleoside phosphoramidites and the polymers are oligonucleotides.

24. (NEW) The method of claim 23 wherein the solid substrate is a high-density array comprising cells in which different oligonucleotides are synthesized, the method further including:

applying the reactive wash solution separately to each cell of the high-density array in order to react with, and deactivate, any unreacted deoxynucleoside phosphoramidites; and

rinsing the surface of the solid substrate to remove the deactivated unreacted deoxynucleoside phosphoramidites and catalyzing reagent from the surface of the solid substrate and from any nascent polymers bound to the substrate.

25. (NEW) The method of claim 23 wherein the solid substrate is a high-density array comprising cells in which different oligonucleotides are synthesized, the method further including:

applying the reactive wash solution separately to each cell of the high-density array in order to react with, and deactivate, any unreacted deoxynucleoside phosphoramidites;

allowing the applied reactive wash solution and reaction solution to evaporate; and

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rinsing the surface of the solid substrate to remove the deactivated deoxynucleoside phosphoramidites and catalyzing agent from the surface of the solid substrate and from any nascent polymers bound to the substrate.

26. (NEW) The method of claim 23 wherein the reactive wash solution includes a chemical compound containing a hydroxyl functional group.

27. (NEW) The method of claim 26 wherein the reactive wash solution is methanol.

28. (NEW) The method of claim 21 wherein the reaction solution includes a reactive dye.

29. (NEW) The method of claim 21 wherein the reaction solution includes a reactive, radio-labeled marker.

30. (NEW) A method of fabricating an array of polymers located at features of the array, the method comprising at each feature:

coupling a reactive monomer molecule to a nascent polymer bound to surface of a solid substrate, the method comprising:

applying monomer molecules and any reagents required to catalyze the coupling of the reactive monomer molecule with the nascent polymer to the surface of the solid substrate; and

applying a reactive wash solution to the surface of the solid substrate to react with, and deactivate, any remaining reactive monomers on the surface of the solid substrate.

31. (NEW) The method of claim 30 wherein the reactive monomers are deoxynucleoside phosphoramidites and the polymers are oligonucleotides.

32. (NEW) The method of claim 31 wherein:

the reactive wash solution is applied separately to each feature of the high-density array; and

rinsing the surface of the solid substrate.

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33. (NEW) The method of claim 32 wherein the surface is rinsed with the reactive wash solution to remove the deactivated unreacted deoxynucleoside phosphoramidites and any catalyzing reagent from the surface of the solid substrate and from any nascent polymers bound to the substrate

34. (NEW) The method of claim 32 wherein the array comprises features at which different oligonucleotides are synthesized, the method further including:
applying the reactive wash solution separately to each cell of the high-density array in order to react with, and deactivate, any unreacted deoxynucleoside phosphoramidites;

allowing the applied reactive wash solution and solution to evaporate;
and

rinsing the surface of the solid substrate with the reactive wash solution to remove the deactivated deoxynucleoside phosphoramidites and catalyzing agent from the surface of the solid substrate and from any nascent polymers bound to the substrate.

35. (NEW) The method of claim 31 wherein the reactive wash solution includes a chemical compound containing a hydroxyl functional group.

36. (NEW) The method of claim 35 wherein the reactive wash solution is methanol.

AI
Counsel

Remarks

The above amendments are made to better define the invention of the present continuation application.

If the Examiner has any questions, the Examiner is invited to call Gordon Stewart at (650)485-2386.

Respectfully submitted,



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